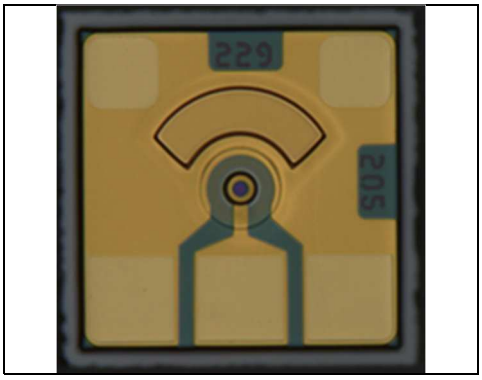
Datasheet

VM100-940Cxx

Vertically Integrated Systems

Up to 112 Gbit/s VCSEL (940nm)
56 GBaud/s PAM-4 modulation

Product Code:	VM100-940C1	1x1 chip
	VM100-940C4	4x1 chip



Actual product may vary in appearance.

Preliminary

Product Description

These compact and very high modulation rate top-emitting GaAs-based vertical cavity surface emitting laser (VCSEL) chips are available as engineering samples for use in the development and evaluation of optical interconnections, optical backplanes and integrated waveguides, and next-generation optical data communications systems. The VCSELs are contacted on the top-surface individually using ground-source ground (GSG) microprobes or wire bonds.

Features

· Up to 112 Gbit/s (PAM-4 modulation)
· Chip size 250 x 250 µm
· Suitable for wire bonding

Applications

· 400G / 800G / 1600G
· Proprietary optical interconnects
· Active Optical Cables (AOC)

Parameter	Typical	Notes
Emission wavelength	940 nm	(available 934 – 948nm)
Data rate	Up to 112 Gbit/s	56 GBaud/s PAM-4
Threshold current	< 0.5 mA	
Peak output power	4 mW	

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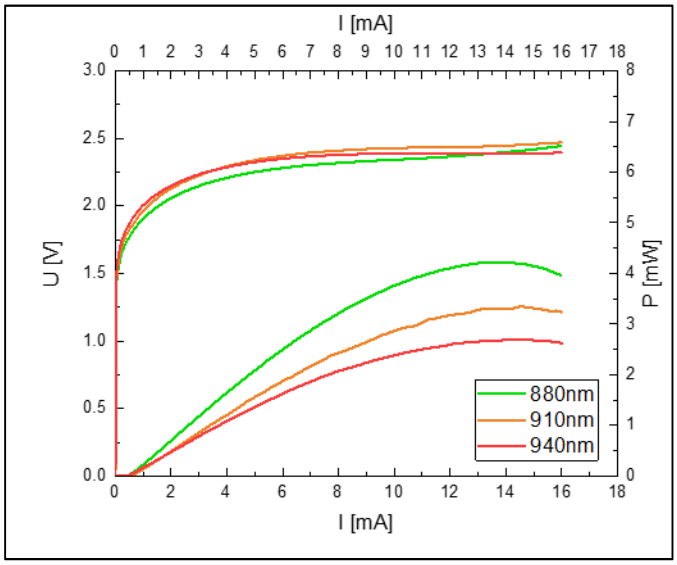
L-I-V Diagram



Electro-optical characteristics (T = 0 to 85 °C)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Emission wavelength	λ		934		948	nm
Data rate	BR	PAM-4		50	56	GBaud/s
Optical bandwidth	BW (f_{3dB})	5 mA		28		GHz
Slope efficiency	η	5-10 mA		0.5		W/A
Threshold current	I_{th}				0.5	mA
Differential resistance	R_d	5-10 mA		100		Ω
Beam divergence	θ	FWHM		20		°
Peak output power	P_{max}				4	mW
Spectral bandwidth (RMS)	$\Delta\lambda_{RMS}$			0.6	0.8	nm

Absolute Maximum Ratings

Parameter	Symbol	Test Condition	Min		Max	Unit
Peak forward current	I_f				8	mA
Maximum reverse voltage	V_{rv}				5	V
Operating temperature	T_{op}				85	°C
Storage temperature	T_{st}		-40		100	°C
Soldering temperature	T_{sl}	max 260 sec			150	°C

All product specifications and descriptions are subject to change without notice.
Please contact our sales department for additional information and to receive a quotation: sales@v-i-systems.com

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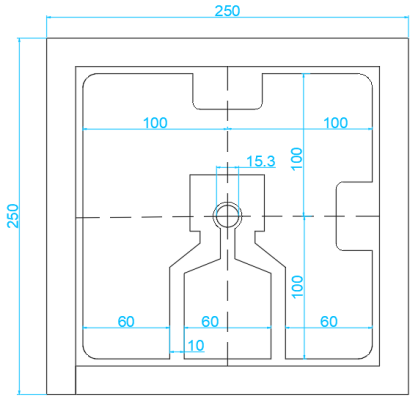
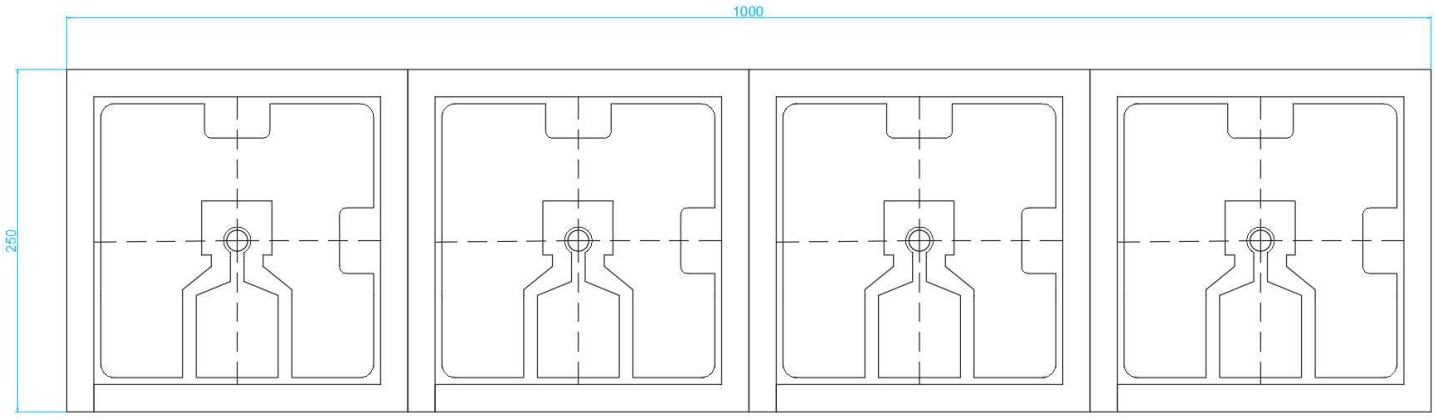
Mechanical Dimensions

Parameter	Type	Min	Typ	Max	Unit
					µm
Length 1x1 VCSEL chip	VM100-940C1		210	250	µm
	VM100-940C4		960	1000	
Height	All	140	150	160	µm
Width	All		210	250	µm

Dimensions of single chip (µm)



Dimensions 4-channel chip array (µm)



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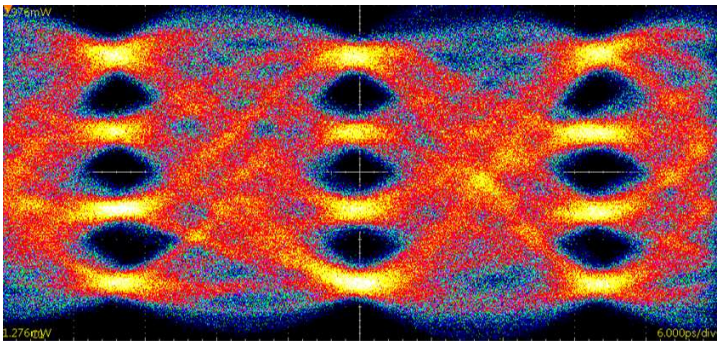
Eye diagram at 100 Gbit/s 4-PAM



Receiver: Textronix 80C15-32 GHz
With 6-tap FFE pre-emphasis

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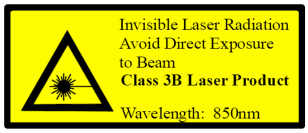
Qualification Notification

The VM100-940Cxx has been tested to meet specifications outlined in this data sheet at room temperature. However, it has not undergone full qualification testing or characterization and therefore may not meet the performance specifications over all extremes.

RoHS Compliant



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